

**CARPENTER ENVIRONMENTAL ASSOCIATES, INC.  
CEA ENGINEERS, P.C.  
CURRICULUM VITAE**

**BRUCE A. BELL, Ph.D., P.E., DEE, PRESIDENT**

**EDUCATION**

B.S. Civil Engineering, New York University, 1968  
M.S. Civil Engineering, New York University, 1969  
Ph.D. Environmental Engineering, New York University, 1974

**REGISTRATION**

Registered professional engineer in New York and New Jersey  
Diplomate, American Academy of Environmental Engineers

**PROFESSIONAL HISTORY**

**President, Carpenter Environmental Associates, Inc., Monroe, New York, 1978 - present**

Promoted to President in 1991.

Responsible for technical direction of all engineering activities of the firm including:

**Wastewater/Storm Water**

- Design and supervision of construction for the upgrading of municipal sewage treatment plants.
- Design of several small private wastewater treatment plants.
- Collection system evaluations: CSO/SSO.
- Operational evaluation, process testing and review, and troubleshooting of POTWs.
- Facility Planning review and analysis.
- Conceptual design for biological nutrient removal.
- Evaluation of biological nutrient removal alternatives.
- Waste treatability studies for industrial wastes.
- Sludge treatment and management evaluations.
- Water quality modeling; Waste assimilative capacity studies.
- Storm water runoff modeling.
- NPDES permitting, comments, negotiations, and appeals.
- Industrial pretreatment studies and implementation of industrial pretreatment programs.
- Preparation of storm water management plans and Storm Water Pollution Prevention Plans.

**Site Assessments/Hazardous Materials**

- SPCC/DPCC Plans.
- Hazardous waste site assessment and remediation.
- Preparation and evaluation of environmental impact statements.
- RCRA closures.

**Air**

- Air permitting, comments, negotiations, and appeals.

**Litigation Support**

- Technical litigation support and expert witness testimony at deposition and trial in federal and state courts.

**Associate Professor and Professor of Engineering, The George Washington University, Washington, D.C., 1978 - 1987**

Promoted to Professor of Engineering in 1982.

Responsible for the University's environmental engineering program.

Directed both graduate and sponsored research.

Taught undergraduate and graduate courses in water supply, wastewater treatment, industrial waste treatment, sanitary engineering design, hydraulics, environmental chemistry, principles of environmental engineering, and environmental impact assessment.

Served as visiting research scientist and consultant at the U.S. Army Medical Bioengineering Research and Development Laboratory.

**Project Manager and Vice President, Flood & Associates, Inc., Consulting Engineers of Jacksonville, Florida, 1975 - 1978**

Promoted to vice president and director of environmental engineering design in 1976.

Responsible for the technical and financial aspects of all of the firm's environmental engineering design projects.

Served as project manager for numerous major treatment plant and pumping station design projects including: design of a 20 MGD advanced wastewater treatment plant which included phosphorous removal, nitrification, denitrification, filtration and ozonation, as well as sludge incineration and lime recovery through recalcination; design of the upgrading and expansion of a 10 MGD lime water softening plant; design of sludge and solids handling systems for a 35 MGD municipal wastewater treatment plant; design of a 5 MGD pure oxygen expansion for a combined municipal/brewery waste treatment plant; design of a 15 MGD activated sludge plant; and design of several large wastewater pumping stations.

Responsible for review of technical content of the firm's 201 Facilities Plans and sludge management studies.

Directed the firm's efforts as consultant to the Commonwealth of Virginia in the research, development, planning, and design related to the contamination of the James River and Hopewell wastewater treatment plant with the pesticide Kepone.

Responsible for the preparation of alternative analysis for the remediation of Kepone contamination of the Hopewell wastewater treatment plant.

Directed research efforts in Kepone biodegradation and incineration.

**Systems Manager, Envirotech Corporation, Belmont, California, 1973 - 1975**

Responsible for profit and loss for chemical-physical and advanced wastewater treatment systems, including thermal and solids handling systems and carbon regeneration systems.

Provided marketing and technical sales support, as well as application engineering.

Responsible for allocation and management of research and development funds in the area of advanced wastewater treatment.

Directed pilot studies in the areas of advanced wastewater treatment, carbon regeneration, and thermal sludge disposal. Carried out research into carbon adsorption and regeneration.

Responsible for process and system designs for solids handling systems and advanced wastewater treatment systems.

**Instructor of Civil Engineering, New York University, New York, 1969 - 1973**

Taught sixteen different courses in Civil and Sanitary Engineering.

Maintained active consulting practice in environmental engineering.

Consulting activities included wastewater treatability studies, pilot plant investigations, design of industrial pretreatment facilities, lake evaluations, and environmental impact analysis.

**Assistant Civil Engineer, New York City Transit Authority, New York, 1964**

Responsible for resident inspection of heavy construction.

Appointed co-director of a project to initiate the Authority's research into appropriate methods for noise abatement in subway systems.

**Field Engineer, Lasker Goldman, Inc. General Contractors, 1962**

Performed field layout and supervision of construction on the construction of a major secondary wastewater treatment plant.

**AFFILIATIONS**

Water Environment Federation  
International Association on Water Quality  
American Society of Civil Engineers  
American Academy of Environmental Engineers

**HONORS**

Diplomate of the American Academy of Environmental Engineers  
Member of Tau Beta Pi, Chi Epsilon, and Perstare et Preaestare honor societies  
Received the Founders Day Award and Hydraulics Prize from New York University  
Received the Outstanding Design Achievement Award from the Florida WPCA  
Nominated for the WPCF Eddy Medal for paper on Munitions Waste Treatment  
Listed in **Who's Who in the South and Southwest, International Who's Who in Engineering, and American Men and Women of Science**

**PROFESSIONAL ACTIVITIES**

Served as a reviewer for WPCF (WEF) Manuals of Practice for Sludge Thickening, Nutrient Removal, and Sludge Conditioning.  
Member of ASCE publication review committee (1979 - ).  
Member WPCF Technical Practices Committee (1977 - 1988).

Reviewer, Research and Equipment proposals, NSF (1979 - 1988).

Member, Program Committee, Seminar on Development and Assessment of Environmental Quality Standards, American Academy of Environmental Engineers (1981).

Faculty, short course on Hazardous Waste Management, Harvard School of Public Health (1982).

Faculty, short courses on Hazardous Waste Management in the 80's, American Public Health Association (1983).

Conference Co-Chairman, Conference on the Treatment of Metal Bearing Wastewaters, NRDC/Texas Instruments, Inc., Mansfield, MA. (1985).

State Membership Chairman, American Academy of Environmental Engineers (1985 - 1987).

Faculty member and developer of course materials, Industrial Pretreatment Enforcement - A Workshop for POTW Attorneys, USEPA and Environmental Law Institute (1990 - 1992).

Faculty member New England Judges' Conference on Environmental Law, Environmental Law Institute, (1991).

Faculty member, New Jersey Judicial College (1992).

Course developer and faculty member "Basic Enforcement Skills," USEPA National Environmental Training Institute, (1992-1993).

Member, Nitrogen Technical Advisory Committee, New York City Department of Environmental Protection (1994 - ).

Member, Technical Review Committee for upgrading of Passaic Valley Sewerage Commissioners 330 mgd pure oxygen treatment plant, Newark, New Jersey (1995 - )

Adjunct Professor, taught graduate course - "Analysis of Receiving Waters", New Jersey Institute of Technology (1995 - 1997 ).

Member, Water Supply and Wastewater sub-committee, American Academy of Environmental Engineers, (1996- ).

Member, Plant Operation and Design Technical Advisory Committee for 100,000 gpd municipal package plant, Town of Saluda, North Carolina (1998 - ).

## **PUBLICATIONS**

1. Schneider, G., Cardenas, R.R., Jr., Bell, B.A. and Beale, D., *The Passaic River, Proceedings, Essex County Environmental Problems and Resources Conference*, 1971.
2. Cardenas, R.R., Jr. and Bell, B.A., *Impact - An Environmental Case Study Involving a Lake and a Builder, Proceedings, American Water Resources Association Conference, St. Louis, MO*, 1972.
3. Bell, B.A., *Advanced Wastewater Treatment, Australian Process Engineering*, 1974.
4. Bell, B.A., *Concepts and Operating Experiences - Advanced Wastewater Treatment Plants, Proceedings, Sixth Federal Convention, Australian Water and Wastewater Association, Melbourne, Australia*, 1974.
5. Bell, B.A. and Molof, A.H., *A New Model of Granular Activated Carbon Adsorption Kinetics, Water Research*, 9, 857-860, 1975.
6. Bell, B.A. and Molof, A.H., *Use of Continuously Stirred Flow Systems for Laboratory Investigation of Wastewater Treatability with Activated Carbon, Proceedings 30th Annual Purdue Industrial Waste Conference West Lafayette, IN*, 1975.

7. Gidlund, E.R. and Bell, B.A., *Groundwater*, in **Encyclopedia of Environmental Science and Engineering**, E. Ziegler and J. Pfafflin, Eds., Gordon and Breach, Science Publication, New York, 1976.
8. Bell, B.A. and Tsumpes, R.V., *Advanced Wastewater Treatment - Pensacola, Florida, Proceedings, Florida Section*, ASCE, Orlando, FL, 1976.
9. Bell, B.A. and Tsumpes, R.V., *Brewery Waste Treatment - Trials and Tribulations, Proceedings 5th Annual WWEMA Industrial Pollution Conference*, Atlanta, GA, 1977.
10. Bell, B.A. and Zaferatos, T.E., *Evaluation of Alternate Solids Handling Methods for Advanced Waste Treatment Line Sludges*, **Journal of the Water Pollution Control Federation**, 49, 146, 1977.
11. Bell, B.A. and Welday, J.M., *Comparison of Complete Mixed Activated Sludge and Unox Treatment of Brewery Wastes*, **Water - 1977**, G. Bennett, Ed. AIChE Symposium Series, 74, 29, 1978.
12. Bell, B.A., Whitmore, F.C. and Cardenas, R.R. Jr., *Anaerobic Biodegradation of Kepone in Sewage Sludge*, **Proceedings, 1978 National Conference on Control of Hazardous Material Spills**, Miami Beach, Florida, 1978.
13. Bell, B.A., Gilley, W.F. and Welday, J.M., *Alternate Methods for the Disposal of the Pesticide Kepone*, **Proceedings, Third Annual Conference on Treatment and Disposal of Industrial Wastewaters and Residues**, Houston, Texas, 1978.
14. Bell, B.A. and Welday, J.M., *Pure Oxygen and Air Activated Sludge Treatment of Brewery Wastes*, **Proceedings, International Environmental Colloquium**, University of Liege, Liege, Belgium, 1978.
15. Bell, B.A. and Welday, J.M., *Thermal Conditioning and Incineration of Combined Brewery/Municipal Sludges*, **Proceedings, 7th Annual WWEMA Industrial Pollution Conference**, Philadelphia, PA, 1979.
16. Bell, B.A., *Energy Conservation and Production from the Anaerobic Digestion of Thermally Conditioned Sludges and Decant Liquors*, **Proceedings Energy Optimization of Water and Wastewater Management for Municipal and Industrial Applications Conference**, US D.O.E., ANL/EES-TM-96, 1979.
17. Bell, B.A., Jeris, J.S. and Welday, J.M., *Anaerobic Fluidized Bed Treatment of Sludge Conditioning Decant Liquor*, **Proceedings Anaerobic Filters: An Energy Plus for Wastewater Treatment**, US D.O.E. Symposium, Orlando, FL, 1980.
18. Bell, B.A., *Advanced Wastewater Treatment*, in **Manual of Instruction for Wastewater Treatment Plant Operators**, New York State Department of Environmental Conservation, 1980.
19. Bell, B.A., Jeris, J.S. and Welday, J.M., *Treatment of Liquors from Thermally Conditioned Sludges by Conventional and Fluid Bed Anaerobic Systems*, **Proceedings ASCE National Conference on Environmental Engineering**, New York, NY, 1980.

20. Bostater, C.R., Jr., Ambrose, R.B. and Bell, B.A., *Modeling the Fate and Transport of Chemicals in Estuaries: Current Approaches and Future Needs*, **Aquatic Toxicology and Hazard Assessment: 4th Congress ASTM**, STP 737, D.R. Branson and K.L. Dickson, Eds. American Society for Testing and Materials, 1981.
21. Mandt, M.G. and Bell, B.A., **Oxidation Ditches in Wastewater Treatment**, Ann Arbor Science Publishers, Ann Arbor, MI, 1982.
22. Bell, B.A., Cardenas, R.R., Jr., Huddleston, R.E., Jr. and Martin A.R., *Procedure for Evaluation of the Impact of Intermittently Discharged Industrial Wastes on Municipal Treatment Facilities*, in **Industrial Wastes**, J.E. Alleman and J.T. Kavanagh Eds., Ann Arbor Science Publishers, Ann Arbor, MI, 1982.
23. Kobylinski, E.A. and Bell, B.A., *Light Metal Cation Inhibition in Anaerobic Digestion*, **Proceedings ASCE Environmental Engineering Conference Boulder, CO**, 1983.
24. Bell, B.A. and Kobylinski, E.A., *Design of Anaerobic Digestion of Lime Sludges*, **Journal of Water Science and Technology**, 16, 375-386 (1984).
25. Bell, B.A., and Hardcastle, G.J., *Treatment of a High Strength Industrial Waste in a Continuously Fed, Intermittently Operated Activated Sludge System*, **Journal of the Water Pollution Control Federation**, 56, 11, 1160-1164, 1984.
26. Gidlund, E.R. and Bell, B.A., *Groundwater*, in **Encyclopedia of Environmental Engineering**, 2nd Ed., J. Pfafflin, Ed., Gordon Breach Publishers, London, England, 1984.
27. Biswas, H., Bell, B.A., and Stuart, T.S., *A Method for Establishing Site-Specific Stream Design Flows for Wasteload Allocations*, **Journal of the Water Pollution Control Federation**, 56, 10, 1123-1130, 1984.
28. Bell, B.A., and Burrows, W.D., *Biological Treatment of Explosive Bearing Wastewaters*, in **Toxic and Hazardous Wastes, Proceedings of the Nineteenth Mid-Atlantic Industrial Waste Conference**, Jeffrey C. Evans, Ed., 1987.
29. Cardenas, Jr., R.R., Bell, B.A., and Hatim, M., *Application of Ultraviolet Disinfection in Small Systems*, in **Resource Mobilization for Drinking Water and Sanitation in Developing Countries**, pp 678 - 685, F.W. Montanari, T.P. Thompson, T.P. Curran, and W. Saukin, Eds., 1987.
30. Bell, B.A. and Burrows, W.D., *Removal and Degradation of TNT in a Semicontinuous Activated Sludge Treatment System*, in **Hazardous and Industrial Wastes, Proceedings of the Twenty First Mid-Atlantic Industrial Waste Conference**, C.A. Cole and D.A. Long, Eds., pp 344 - 356, 1989.
31. Joo, H.J., Sijin, L. and Bell, B. A., *CFID Application on Industrial Wastewater; Organic and Nitrogen Removal*, **Proceedings of 2<sup>nd</sup> WEF Asia/Pacific Rim Conference on Water Pollution Control**, Yokohama, Japan, 1992.



32. Garabed, S., Amuro, A., Stone, J., Bell, B., and Melnyk, P., *A Full Scale Comparison of Conventional and DAF Primary Treatment*, NYWEA Environmental Technical Conference, Lake George, NY, 1996.

#### **SELECTED TECHNICAL REPORTS**

1. *Environmental Impact of a Proposed Housing Development on Lake Waneta, N.Y.*, with R.R. Cardenas, Jr., 1972.
2. *Water System Evaluation, Pensacola, Florida*, Flood & Associates, Inc., 1976.
3. *Kepone Incineration Test Program*, with F.V. Whitmore, U.S.E.P.A., EPA-600/278-108, 1978.
4. *Anaerobic Digestion of Thermal Sludge Conditioning Decant Liquor and Conditioned Sludge*, Carpenter Associates, Inc., 1979.
5. *Discharge and Treatment of Spent Toner Wastes*, Carpenter Environmental Associates, Inc., 1981.
6. *Final Technical Report, Cation Toxicity in the Anaerobic Digestion of Lime Sludge*, U.S. Army Medical Bioengineering Research and Development Laboratory, Technical Report 8205, 1982.
7. *Final Technical Report, Munitions Wastewater Treatment in Semicontinuous Activated Sludge Treatment Systems*, U.S. Army Armament Research and Development Center, Large Caliber Weapon Systems Laboratory, Dover, N.J., Contractor Report ARLCD-CR-84029, 1984.
8. *Environmental Evaluation of the Use, Handling, Storage and Transportation of Chemicals at an Industrial Facility in Briarcliff Manor, N.Y.*, Carpenter Environmental Associates, Inc., 1985.
9. *Final Technical Report, A Simplified Method for the Determination of Mixing Zones in Estuaries*, USEPA, 1985.
10. *Final Technical Report, Pilot Scale Evaluation of Semicontinuous Activated Sludge Treatment of Munitions Bearing Wastewater*, U.S. Army Armament Research and Development Center, Large Caliber Weapon Systems Laboratory, Dover, N.J. Carpenter Environmental Associates, Inc., 1987.
11. *Engineering Report - Hamlet Sewage Treatment Plant Improvements, Town of Tuxedo, N.Y.*, Carpenter Environmental Associates, Inc., 1987.
12. *Expert Witness Report Evaluation of Lack of Compliance with NJPDES Permit, P. D. Oil & Chemical Storage, Inc., Bayonne, New Jersey*, Carpenter Environmental Associates, Inc., 1988.
13. *Final Report, Conceptual Design, Biological Nutrient Removal, Annapolis Water Reclamation Facility, Annapolis, Maryland*, Carpenter Environmental Associates, Inc., 1989.
14. *SPCC and ISC plans, ARDEC, Picatinny Arsenal, New Jersey*, Carpenter Environmental Associates, Inc., 1990. Updated 1999.

15. Expert Witness Report *Evaluation of Lack of Compliance with NJPDES Permit, Yates/Circuit Foil, Bordentown, New Jersey*, Carpenter Environmental Associates, Inc., 1992.
16. *New Lisbon Development Center Wastewater Treatment Plant Optimization Study*, New Jersey Department of Human Services, Carpenter Environmental Associates, Inc., 1992.
17. *Comparison of Dissolved Air Flotation and Conventional Clarification, Sand Island Wastewater Treatment Plant, Honolulu, Hawaii*, P.B. Melnyk, GMP Associates, Inc. and Carpenter Environmental Associates, Inc., 1994.
18. *Nitrification Toxicity Study*, Mount Pocono (PA) Municipal Authority, Carpenter Environmental Associates, Inc., 1994.
19. *Evaluation of Wastewater Treatment Plant, New Lisbon Development Center*, New Jersey Department of Human Services, Carpenter Environmental Associates, Inc., 1995.
20. *Wastewater Treatment Plant Preliminary Evaluation at Floyd Bennett Field*, U. S. Department of the Interior, Carpenter Environmental Associates, Inc., 1995.
21. Expert Witness Report: *Interference with Operation of the Hammond Sanitary District Wastewater Treatment Plant, Combined Sewer Overflow not in Compliance with Permit Conditions and Pollutant Loadings to the West Branch of the Grand Calumet River*, prepared for the USDOJ, Carpenter Environmental Associates, Inc., 1995, Updated 1999.
22. *Report on the Actions Needed for Evans Industries, Inc., Evans Cooperage Company, Inc., and Evans Container Corporation, Inc. to Come into Compliance with their Clean Water Act Discharge Permit*, Carpenter Environmental Associates, Inc., 1997.
23. *Evaluation Of and Comments on UPRC's Draft NPDES Permit*, Carpenter Environmental Associates, Inc., 2000.

Case 1:02-cv-00107-SAS